UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,350	02/09/2005	Sergey Vasilievich Marutian	P06835US00	2639

22885 7590 10/13/2010

MCKEE, VOORHEES & SEASE, P.L.C.
801 GRAND AVENUE
SUITE 3200
DES MOINES, IA 50309-2721

EXAMINER	
BAREFORD, KATHERINE A	

ART UNIT	PAPER NUMBER
1715	

NOTIFICATION DATE	DELIVERY MODE
10/13/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patatty@ipmvs.com

Office Action Summary	**Application No.**	**Applicant(s)**	
	10/500,350	MARUTIAN ET AL.	
	Examiner	**Art Unit**	
	Katherine A. Bareford	1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 18, 2010 has been entered.

The amendment of August 18, 2010, filed with the RCE submission, has been received and entered. With the entry of the amendment, claims 1-5 have been canceled, and claim 6 and new claims 7-8 are pending for examination.

Claim Objections

2. The objection to claim 6 because of informalities is withdrawn due to applicant's clarifying amendment to claim 6 in the amendment of August 18, 2010.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The objection to claim 6 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn due to applicant's amendments to claim 6 in the amendment of August 18, 2010 to removed the described new matter.

5. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 6, last two lines, provides "bending the coated product on a 10 mm cylindrical mandrel without breaking the alloy coating". The specification describes testing "plasticity of the coatings" by "testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn't break" (page 3, first paragraph), with description of "Minimum diameter of mandrel, mm" in Table 1, which appears to indicate that "10 mm" refers to "diameter of mandrel". This simply does not provide an adequate description of how the bending without breaking the alloy coating works such that this test can be reproduced, understood or compared, and thus one of ordinary skill in the art would not be able to make and/or use the invention. First, it is unclear what is required by the "bending"—by what degrees is the "coated product" is bent around the mandrel, such as, must it go 100%, 10 degrees, 90 degrees, etc. It is also unclear what thickness the substrate is or is not and what

thickness the coating is or is not, which would clearly affect how much winding and what effect could occur. As well, it is not clear what the mandrel is made from. All of those features would affect the resulting results from bending the coated product around a mandrel. Moreover, if this is a known standardized test, such as an ASTM test, it is not clear from the claim or disclosure what this test would be. The disclosure has not referred to a specific test, but rather provided a general description of a testing with bending.

6. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for plunging into an aluminum alloy melt at a temperature of 660-680 degrees C, and for 70-80 seconds, does not reasonably provide enablement for plunging at a temperature of 650-660 degrees C and for 80-120 seconds. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Applicant's disclosure, as filed, specifically provides that the temperature of the melt is to be 660-680 degrees C to be part of the invention (see original claim 1, the abstract, and pages 2-4 of the specification). The only times of plunging described in the disclosure as filed for the 660-680 degree bath temperature range is 70 and 80 seconds, not 80-120 (with 120 disclosed for 650 degrees C). One of ordinary skill in the art at the time the invention was made would have to perform undue experimentation to test

every possible composition at the temperatures between 650-660 degrees C and times between 80-120 seconds to see if the invention worked under those conditions.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6, last two lines, provides "bending the coated product on a 10 mm cylindrical mandrel without breaking the alloy coating". The specification describes testing "plasticity of the coatings" by "testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn't break" (page 3, first paragraph), with description of "Minimum diameter of mandrel, mm" in Table 1, which appears to indicate that "10 mm" refers to "diameter of mandrel". This simply does not provide an adequate description of how the bending without breaking the alloy coating works such that this test can be reproduced, understood or compared. First, it is unclear what is required by the "bending"—by what degrees is the "coated product" is bent around the mandrel, such as, must it go 100%, 10 degrees, 90 degrees, etc. It is also unclear what thickness the substrate is or is not and what thickness the

coating is or is not (for example note in Table 2 that at 650 degrees C, the coating thickness is 80 microns, which is different than the 60 and 70 microns for the temperatures in the claimed range, and at 710 degrees the thickness is at 90 microns), which would clearly affect how much bending and what effect could occur. As well, it is not clear what the mandrel is made from. All of those features would affect the resulting results from winding the coated product around a mandrel. Moreover, if this is a known standardized test, such as an ASTM test, it is not clear from the claim or disclosure what this test would be. The disclosure has not referred to a specific test, but rather provided a general description of a testing with bending.

Claim 6, last two lines, provides "bending the coated product on a 10 mm cylindrical mandrel without breaking the alloy coating". Furthermore, it is unclear if this newly claimed process step at the end of claim 6 is intended to be part of the aluminum alloy "coating process" of the preamble and thus must occur after the plunging, with no intervening steps (as part of the coating process with "consisting of" steps) or whether this is intended to be a separate further step that can occur at any point after the plunging. For the purpose of examination, either can be the case, but applicant should clarify what is intended, without adding new matter.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. The rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Rallis (US 4655852) in view of Japan 50-005213 (hereinafter '213) is withdrawn due to applicant's amendment, arguments and the Frankel Declaration of August 18, 2010.

12. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gierek et al (US 4070210) in view of Rallis (US 4655852) and Japan 50-005213 (hereinafter '213).

Claims 7-8: Gierek teaches a method of applying aluminum alloy coatings on cast iron and steel products. *Column 2, lines 35-65 and column 5, lines 25-26 and 44-45.* Gierek teaches that the product is first prepared for coating. *Column 5, lines 25-35 (such as*

preheating and cleaning before coating). Gierek indicates that preheating is optional, however. *Column 2, lines 58-60 (products "may" be preheated).* Gierek then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 5, lines 25-35, for example and column 2, lines 35-65 (this provides simultaneous heat treatment from the molten bath and coating).* The temperature of the bath can be 550-950 degrees C, such as 550 to 650 degrees C. *Column 2, lines 50-60 and column 5, lines 25-30.* Gierek further teaches that the bath can include aluminum alloyed with metal such as zinc, silicon, magnesium and tin materials. *Column 2, lines 50-55.* Gierek provides that the aluminum coatings can be applied without flux when desired. *Note Example VI, column 5, lines 25-40 where the coating is applied without any flux treatment as compared to Example VII, column 45-50, where a flux treatment is applied.* Gierek further provides that the time of plunging can be 15 seconds to 30 minutes. *Column 2, lines 50-60, including 1-10 minutes, column 4, lines 40-45, or 30 seconds to 10 minutes, column 4, lines 5-10.* Therefore, the time in the melt can be in the range of 70-80 seconds, since In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Gierek provides all the features of these claims except (1) the pretreatment with jet abrasive followed by the next step of plunging, (2) precise temperature of the melt

bath and the precise amounts of zinc, silicon, magnesium, and tin to be used in the aluminum melt.

Rallis teaches a method of applying aluminum alloy coatings on steel products. *Column 2, lines 1-10, 34-50 and 64-68.* Rallis teaches that the product is first prepared for coating. *Column 2, lines 10-40 (heat treating) and column 6, lines 40-60 (heat treating and cleaning before coating)*. The cleaning preparation can include grit blasting (which would be a jet abrasive) the product. *Column 6, lines 40-60*. Rallis then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 6, lines 55-68, for example and column 2, lines 35-50 and 64-68.* The temperature of the bath can be 1000 to below 1341 degrees F (approximately 538 to 727 degrees C). *Column 2, lines 34-40.* Rallis further teaches that the bath can include aluminum alloyed with zinc, silicon, magnesium and tin materials. *Column 2, line 64 through column 3, line 5 (from a selection of the materials given)*. Applicant has now claimed that the process is "consisting of" the steps of "preparing a surface of the product by jet-abrasion; and then plunging the prepared product into an aluminum melt . . ." (claims 7-8). The Examiner understands this to mean that a provided product must be prepared by jet-abrasion and then plunged into the aluminum melt without any intervening steps. Rallis would at least suggest this sequence because it provides a heat treated product (*note for example column 7, lines 5-12*), and then degreasing and grit blasting followed by dipping into a molten aluminum bath (*column 7, lines 10-15*). This would at least suggest that grit blasting (jet abrasion) can be followed by plunging with

no intervening steps because (1) grit blasting is the last step taught before plunging, or (2) since "degreasing and grit blasting" are described as occurring before plunging then it would be expected that either degreasing or grit blasting could occur as the final step before plunging with an expectation of similar results, or (3) since no particular limitation is provided on the "preparing to product surface by jet-abrasion" the "jet-abrasion process" could be considered as reading on the combination of "degreasing and grit blasting".

Moreover, ‘213 teaches that a desirable aluminum alloy composition for improved corrosion resistance includes, by weight, 2-18 % silicon, 2-8 % zinc, 0-2% magnesium and 0.1-1.5% Sn. *See the Abstract, and page 2 of the translation*. The Examiner notes that while the English language abstract refers to 0.5% copper in the alloy, this is a typographical error, and that ‘213 teaches 0-5% copper (which therefore means that no copper can be used), (*as shown on page 61, 1st column in Japanese; page 2 of the translation*) where " . . . Si 2-18%, Zn 2-8%, Cu 0-5%, Mg 0-2 % , Sn 0.1-15%. . . " is described, and also notes in the example in the abstract where 0.02 % copper is used which is below 0.5 % copper .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gierek to (1) provide that the "cleaning" process before coating provides grit blasting (jet abrasive treatment) immediately before plunging into the aluminum melt as suggested by Rallis with an expectation of desirable cleaning results, because Gierek teaches to provide a "cleaning" process before aluminum alloy

melt coating and Rallis provides that it is well known for "cleaning" to include grit blasting when preparing a surface for aluminum alloy melt coating that would occur just before the aluminum alloy melt coating. (2) It would further have been obvious to modify Gierek in view of Rallis to optimize the temperature of the melt bath for the specific aluminum alloy used given that Gierek teaches a temperature range of approximately 550 to 950 degrees C, including 650 degrees C, and where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, it would have been obvious to modify Gierek in view of Rallis to perform the hot dip coating of the aluminum alloy using an alloy with the components and range taught by '213 with an expectation of providing a desirably corrosion resistant plated article, because Gierek teaches a desirable method for providing hot dip coating of an aluminum alloy on an iron or steel product using an aluminum alloy that can contain aluminum and alloying metal such as zinc, silicon, magnesium and tin and Rallis also teaches to providing hot dip coating of an aluminum alloy on a steel product using an aluminum alloy that can contain aluminum and zinc, silicon, magnesium and tin, and that such alloy materials can be added in combination, and '213 teaches a desirable aluminum alloy containing aluminum, zinc, silicon, magnesium and tin for improved corrosion protection. It would further have been obvious to optimize within the taught range of '213 to determine the optimum or workable ranges by routine experimentation. See In re Aller,

200 F.2d 454, 105 USPQ 233 (CCPA 1955). The Examiner understands the ranges given in '213 to be in weight percent as the description is in the conventional format for describing weight percent of alloys and as page 2 of the translation indicates that the percentages are in weight percent. While applicant in the specification appears to be taking the position that alloys outside the claimed ranges and temperatures do not provide the claimed results, apparently arguing unexpected benefits, the Examiner notes that no results have been shown for an alloy containing aluminum, zinc, silicon, magnesium and tin in amounts just outside the claimed ranges, with a showing of unexpected results within the ranges. Rather the comparative data of Table 1 is to alloys missing some ingredients altogether (while the cited reference to '213 suggests alloys specifically containing Si, Zn, Mg and Sn), and as to Table 2 only a single point of ingredients is shown, not the ranges as claimed, and therefore unexpected results are not shown for the temperature range (in fact, as to claim 8, the range of 650 degrees C being claimed means that no bottom temperature outside the claimed range is even shown) (Note MPEP 716.02(d), unexpected results must be commensurate in scope with what is claimed, note In re Peterson, 315 F.3d 1325, 1329-31, 65 USPQ2d 1379, 1382-85 (Fed. Cir. 2003) (data showing improved alloy strength with the addition of 2% rhenium did not evidence unexpected results for the entire claimed range of about 1-3% rhenium)).

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gierek et al (US 4070210) in view of Rallis (US 4655852), Japan 50-005213 (hereinafter '213) and the admitted state of the prior art.

Claim 6: Gierek teaches a method of applying aluminum alloy coatings on cast iron and steel products. *Column 2, lines 35-65 and column 5, lines 25-26 and 44-45.* Gierek teaches that the product is first prepared for coating. *Column 5, lines 25-35 (such as preheating and cleaning before coating).* Gierek indicates that preheating is optional, however. *Column 2, lines 58-60 (products "may" be preheated).* Gierek then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 5, lines 25-35, for example and column 2, lines 35-65 (this provides simultaneous heat treatment from the molten bath and coating).* The temperature of the bath can be 550-950 degrees C, such as 550 to 650 degrees C. *Column 2, lines 50-60 and column 5, lines 25-30.* Gierek further teaches that the bath can include aluminum alloyed with metal such as zinc, silicon, magnesium and tin materials. *Column 2, lines 50-55.* Gierek provides that the aluminum coatings can be applied without flux when desired. *Note Example VI, column 5, lines 25-40 where the coating is applied without any flux treatment as compared to Example VII, column 45-50, where a flux treatment is applied.* Gierek further provides that the time of plunging can be 15 seconds to 30 minutes. *Column 2, lines 50-60, including 1-10 minutes, column 4, lines 40-45, or 30 seconds to 10 minutes, column 4, lines 5-10.* Therefore, the time in the melt can be in the range of 70-80 seconds, since In the case where the claimed ranges "overlap or lie inside

ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Gierek provides all the features of this claim except (1) the pretreatment with jet abrasive followed by the next step of plunging, (2) precise temperature of the melt bath and the precise amounts of zinc, silicon, magnesium, and tin to be used in the aluminum melt and (3) the mandrel test features.

Rallis teaches a method of applying aluminum alloy coatings on steel products. *Column 2, lines 1-10, 34-50 and 64-68.* Rallis teaches that the product is first prepared for coating. *Column 2, lines 10-40 (heat treating) and column 6, lines 40-60 (heat treating and cleaning before coating).* The cleaning preparation can include grit blasting (which would be a jet abrasive) the product. *Column 6, lines 40-60.* Rallis then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 6, lines 55-68, for example and column 2, lines 35-50 and 64-68.* The temperature of the bath can be 1000 to below 1341 degrees F (approximately 538 to 727 degrees C). *Column 2, lines 34-40.* Rallis further teaches that the bath can include aluminum alloyed with zinc, silicon, magnesium and tin materials. *Column 2, line 64 through column 3, line 5 (from a selection of the materials given).* Applicant has now claimed that the process is "consisting of" the steps of "preparing a surface of the product by jet-abrasion; and then plunging the prepared product into an aluminum melt . . ." (claim 6). The Examiner understands this to mean that a provided product

must be prepared by jet-abrasion and then plunged into the aluminum melt without any intervening steps. Rallis would at least suggest this sequence because it provides a heat treated product (*note for example column 7, lines 5-12*), and then degreasing and grit blasting followed by dipping into a molten aluminum bath (*column 7, lines 10-15*). This would at least suggest that grit blasting (jet abrasion) can be followed by plunging with no intervening steps because (1) grit blasting is the last step taught before plunging, or (2) since "degreasing and grit blasting" are described as occurring before plunging then it would be expected that either degreasing or grit blasting could occur as the final step before plunging with an expectation of similar results, or (3) since no particular limitation is provided on the "preparing to product surface by jet-abrasion" the "jet-abrasion process" could be considered as reading on the combination of "degreasing and grit blasting".

Moreover, ‘213 teaches that a desirable aluminum alloy composition for improved corrosion resistance includes, by weight, 2-18 % silicon, 2-8 % zinc, 0-2% magnesium and 0.1-1.5% Sn. *See the Abstract, and page 2 of the translation*. The Examiner notes that while the English language abstract refers to 0.5% copper in the alloy, this is a typographical error, and that ‘213 teaches 0-5% copper (which therefore means that no copper can be used), (*as shown on page 61, 1st column in Japanese; page 2 of the translation*) where “ . . . Si 2-18%, Zn 2-8%, Cu 0-5%, Mg 0-2 % , Sn 0.1-15%. . . “ is described, and also notes in the example in the abstract where 0.02 % copper is used which is below 0.5 % copper.

Moreover, the admitted state of the prior art teaches that using a mandrel to test a coating by known standardized tests, such as ASTM D522, would be known test methods that involve bending a coated article on a mandrel to determine the resistance to cracking of the coating (as admitted by applicant in the amendment of August 8, 2009, for example, see page 12 and Exhibits B and C) (Note MPEP 2129 (I)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gierek to (1) provide that the "cleaning" process before coating provides grit blasting (jet abrasive treatment) immediately before plunging into the aluminum melt as suggested by Rallis with an expectation of desirable cleaning results, because Gierek teaches to provide a "cleaning" process before aluminum alloy melt coating and Rallis provides that it is well known for "cleaning" to include grit blasting when preparing a surface for aluminum alloy melt coating that would occur just before the aluminum alloy melt coating. (2) It would further have been obvious to modify Gierek in view of Rallis to optimize the temperature of the melt bath for the specific aluminum alloy used given that Gierek teaches a temperature range of approximately 550 to 950 degrees C, including 650 degrees C, and where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, it would have been obvious to modify Gierek in view of Rallis to perform the hot dip coating of the aluminum alloy using an alloy with the components and range taught by '213 with an

expectation of providing a desirably corrosion resistant plated article, because Gierek teaches a desirable method for providing hot dip coating of an aluminum alloy on an iron or steel product using an aluminum alloy that can contain aluminum and alloying metal such as zinc, silicon, magnesium and tin and Rallis also teaches to providing hot dip coating of an aluminum alloy on a steel product using an aluminum alloy that can contain aluminum and zinc, silicon, magnesium and tin, and that such alloy materials can be added in combination, and '213 teaches a desirable aluminum alloy containing aluminum, zinc, silicon, magnesium and tin for improved corrosion protection. It would further have been obvious to optimize within the taught range of '213 to determine the optimum or workable ranges by routine experimentation. See In re Aller, 200 F.2d 454, 105 USPQ 233 (CCPA 1955). The Examiner understands the ranges given in '213 to be in weight percent as the description is in the conventional format for describing weight percent of alloys and as page 2 of the translation indicates that the percentages are in weight percent. While applicant in the specification appears to be taking the position that alloys outside the claimed ranges and temperatures do not provide the claimed results, apparently arguing unexpected benefits, the Examiner notes that no results have been shown for an alloy containing aluminum, zinc, silicon, magnesium and tin in amounts just outside the claimed ranges, with a showing of unexpected results within the ranges. Rather the comparative data of Table 1 is to alloys missing some ingredients altogether (while the cited reference to '213 suggests alloys specifically containing Si, Zn, Mg and Sn), and as to Table 2 only a single point of

ingredients is shown, not the ranges as claimed, and therefore unexpected results are not shown for the temperature range (Note MPEP 716.02(d), unexpected results must be commensurate in scope with what is claimed, note In re Peterson, 315 F.3d 1325, 1329-31, 65 USPQ2d 1379, 1382-85 (Fed. Cir. 2003) (data showing improved alloy strength with the addition of 2% rhenium did not evidence unexpected results for the entire claimed range of about 1-3% rhenium)). (3) As to the resulting coating meeting the claimed mandrel test features, the Examiner notes the confusion as to what is actually required by the Mandrel test as discussed in the 35 USC 112, first and second paragraph rejections above. However, it is the Examiner's position that the coating method provided by Gierek in view of Rallis and '213 would provide a coating that meets the claimed Mandrel test, because Gierek in view of Rallis and '213 provides a coated article with an aluminum alloy of the percentage requirements of zinc, silicon, magnesium and tin, which is what appears to be required to meet the Mandrel test as described by applicant in the specification, and the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The Examiner also notes MPEP 2112, as noting that "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir.

1999). Furthermore, as to actually performing a mandrel test by bending the coated product on a 10 mm cylindrical mandrel without breaking the alloy coating, it is the Examiner's position that it would have been obvious to perform this step as part of the optimizing of coating temperatures and alloys as discussed for part (2) above as suggested by the admitted state of the prior art, because to optimize, one would perform testing to determine what temperatures/alloys give the best results, for example, and using a mandrel to test the coating by the known standardized tests would be a known test method that involve bending a coated article on a mandrel to determine the resistance to cracking of the coating (as admitted by applicant), and therefore help determine the best coating. This test can occur without other steps occurring after the plunging in aluminum melt (and removal, since the plunging time is limited), because nothing else is required to occur by Gierek other than cooling (which would occur as a result of removal from the aluminum melt) (If that is what is intended, note the 35 USC 112, second paragraph rejection above).

Response to Arguments

14. Applicant's arguments filed August 18, 2010 have been fully considered but they are not persuasive.

(A) The 35 USC 112, first paragraph, Enablement rejection and 35 USC 112, second paragraph rejection

Applicant's attorney argues that the degree of bending is not critical, as claim 6 only requires the product be bent on the mandrel without breaking the coating, but does not require the full length of the product to be so tested, and that the thickness of the substrate and coating are also not critical, with applicant's process being usable on various substrates having different thickness. As to the Examiner's position that the mandrel material will affect the mandrel test results, applicant’s attorney argues that whether the material is made of plastic, metal, wood, or some other composition is irrelevant to the bending test.

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the degree of bending, the Examiner notes that the amount the material is bent (not whether it is bent on the full length of the product), such as 10 degrees, 20 degrees, 50 degrees, for example, around the Mandrel would clearly have an effect on the results. A coating, on a substrate, may crack at being bent at 20 degrees around a mandrel, but not crack at being bent 10 degrees, for example. Similarly, it would appear that thickness of the substrate and coating would have an affect on the bending ability and cracking resulting as a thicker article of the same material or thicker coating of the same material would be understood to be generally less flexible. As to what the mandrel is made from, if it is a flexible material it would appear to provide for a different bending effect that if it was a rigid material. While applicant’s coating method may be usable on different substrates of different thicknesses with different

coating thicknesses, it is not clear what results will allow a test that duplicates the bending requirements as claimed

(B) The 35 USC 103(a) rejection using Rallis in view of Japan '213

The Examiner has withdrawn this rejection due to applicant's arguments and the declaration of Mr. Frankel of August 18, 2010 as to the newly claimed time of plunging features.

However, the new 35 USC 103(a) rejections above using Gierek as the primary reference have been provided due to these newly claimed features.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/
Primary Examiner, Art Unit 1715